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ABSTRACT

Forty male and forty female high school students engaged in a group decision making task in both mixed-and single-sex 4-person groups of strangers. Those subjects who participated in a mixed group were also together in a microteaching class. The study addressed three questions: (1) What are the leadership behaviors of females, and do they differ from those of males? (2) Do the behaviors and activity rates of males and females differ when they work on a task in groups with same-gender peers or in groups of mixed gender? (3) Are the behaviors of males and females working on a nonacademic group task correlated with their behaviors in a simulated classroom? The results showed no differences between the task oriented activity of males and females in single-sex groups. In mixed-sex groups whose members were unfamiliar with the task, females were less active and less influential than males. In mixed-sex groups whose members had experienced the task previously in a single-sex group, there was greater activity and influence on the part of the females. The implications of the study for educational interventions are outlined. Instructions for playing the decision making game and for carrying out the experiment are appended. (Author/JAC)

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FINAL REPORT

THE MODIFICATION OF FEMALE LEADERSHIP BEHAVIOR IN THE PRESENCE OF MALES

Marlaine E. Lockheed

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October 1976

EDUCATIONAL TESTING SERVICE
PRINCETON, NEW JERSEY

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Marlaine E. Lockheed
Educational Testing Service

October 1976

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Abstract

Research about the behavior of males and females in mixed-sex groups shows that females are less active than males, females are less influential than males and females are less task oriented than males. Few studies compare the behavior of males in all-male groups with those of females in all-female groups when both are engaged in identical tasks.

In this study, male and female high school students were screened for age, race, verbal ability and cognitive style. All subjects engaged in a group decision making task in both mixed- and single-sex 4-person groups of strangers.

The results showed no differences between the task oriented activity of males and females in single-sex groups. In mixed-sex groups whose members were unfamiliar with the task, females were less active and less influential than males. In mixed-sex groups whose members had experienced the task previously in a single-sex group, there was greater activity and influence on the part of the females. The implications of the study for educational interventions are outlined.

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Any errors in the analysis or interpretation are the author's responsibility alone.

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I

INTRODUCTION

Statement of the Problem

A nation holding that "all men are created equal" is now beginning to assert that all men and women are created equal. But moving from assertion to action is not easy.

Certainly women do not now participate equally in positions of leadership and influence in this country. For example, in 1972 there was but one woman in the United States Senate and twelve women in the House of Representatives. There were no women governors. Only two of the 500 largest U.S. cities had women mayors. In a recent survey of the 67 largest corporations in California, of the 1008 corporate directors, only six were women, and of these, only two were unrelated to other directors. Furthermore, women workers are underrepresented in the most influential and prestigious occupations. According to a recent report from the Department of Labor, while 48 percent of all male workers are employed as proprietors, managers, professionals, or craftsmen, only 20 percent of female workers are so employed.

Why? What is the reason for such an inequitable distribution of leadership and influence between the sexes? Are women genetically incapable of assuming leadership? Are they inherently inferior to men? Are they simply not interested in being influential? We think not. We believe that the natural emergence of a leader from a group of people is a function of the evaluation of that kind of individual in the larger society and may have nothing to do with either his or her motivation to be a leader or his or her competence at the task at hand. Furthermore, we believe that little is known about the behaviors of females in positions of leadership. What are these behaviors? How do they differ from

male leadership behavior? Do males and females use different behavior in groups composed of same-sex peers than they use in mixed-gender groups? This study will answer these questions.

Review of the Literature

What is the pattern of leadership in mixed-gender groups? Hall (1972) makes three generalizations about the differences in behavior between men and women in groups:

1. Men are more active than women. That is, men initiate more verbal acts than women. This was found to be the case in jury deliberations (Strodtbeck & Mann, 1956; Strodtbeck, James & Hawkins, 1957), in couples discussing "revealed differences" of opinion (Heiss, 1962) and in classroom discussions (Zander & Van Egmond, 1958; Lockheed-Katz, 1972).

2. Men are more influential than women. That is, women are more likely to yield to men's opinions than men are to women's. This was found by Tuddenham, MacBride, and Zahn (1958) regarding a distorted norm; by Whittaker (1965) regarding a judgment about an autokinetic light; by Strodtbeck, James, and Hawkins (1957) regarding the outcome of the jury deliberations; by Kenkel (1957) regarding husband-wife decision making, and by Zander and Van Egmond (1958) regarding boys and girls in school.

3. Men are more "task-oriented" and women are more "social-emotional." Men initiate a higher proportion of suggestions in group decision making that move the group toward completion of the task, while women initiate a higher proportion of responses relating to the social or emotional support of group members (Strodtbeck & Mann, 1956; Heiss, 1962; Kenkel, 1957).

By all three indicators we may conclude that the leadership of mixed-gender groups can be attributed to males. Buy why should this be the case?

One explanation frequently offered is that males are simply more active and overtly aggressive than girls. Bardwick (1971) reviews the literature on male-female differences in aggressiveness and concludes that males are more aggressive. This generalization is supported by observations of children made at very early ages (Hattwick, 1937; Whiting & Whiting, 1966, Maccoby, 1966). It is argued that females are more passive and dependent, and that their behaviors reflect this personality trait (Kagan & Moss, 1962; McCandless, Bilous, & Bennett, 1961). Thus, when confronted with a task, they are simply less assertive about the task.

One problem with this explanation is that the behavior of girls and boys or men and women is frequently observed in mixed-gender situations where the task is shared or in single-sex situations where the tasks differ. Few studies compare the activity levels of males and females working at the same task under sex-segregated conditions. In a recent unpublished study of black-white integration, the present investigator was able to make such a comparison. Four-person sex-segregated but racially balanced groups of adolescents were randomly assigned to play a group decision-making board game (hereafter referred to as The Game and described in Appendix A). The overall task-oriented verbal initiation rates of the children playing The Game do not show the females to be less active than the males. (Table 1.) This picture is not what one would expect from the previous review of the literature.

Table 1

Total Verbal Acts Initiated by Type of Group Member and Gender of Group

Gender of Group	Type of Group Member: More Active Black	Less Active Black	More Active White	Less Active White
Male (N = 8)	261	177	190	114
Female (N = 8)	247	177	302	180

Evidence more in line with what the literature would suggest may be found in other data collected by the present investigator. Six four-person, all black, groups of two boys and two girls also played The Game. Table 2 presents the total verbal initiation rates of each type of member in the six mixed-gender groups. The males show what is considered to be characteristic of greater activity. A similar pattern of greater male activity in mixed-gender groups was found by Hall (1972) in experimentally composed groups of teachers.

Table 2

Total Verbal Acts Initiated by Type of Group Member in Mixed-Gender Group

Gender of Group	Type of Group Member			
	More Active Male	Less Active Male	More Active Female	Less Active Female
Mixed (N = 6)	135 (180)*	96 (128)*	101 (135)*	37 (49)*

*Adjusted for N = 8 for comparison with Table 1.

The suggestion of differences in the data reported above is confounded by the issue of the racial composition of the groups. It is the purpose of this study to investigate the problem systematically.

What are the behaviors used by leaders of the all-female groups? Do they occur less frequently in mixed-gender groups? Why should the activity of females be reduced in the presence of males?

Theoretical Framework

The consistent finding that males emerge as task leaders in mixed-gender groups may be explained by the theory of diffuse status characteristics and expectation states (Berger, Cohen, & Zelditch, Jr., 1972). The theory claims that group leadership emerges as a function of performance expectations held by group members for themselves and others. These expectations are associated with differentially evaluated states of individual characteristics. Such characteristics are called "diffuse status characteristics." Berger et al. define a diffuse characteristic as having the following three properties:

1. The states of the diffuse status characteristic are differentially evaluated. That is, it is better to have one state than the other. For instance, in the case of "gender" as a diffuse status characteristic, there are two states of this characteristic: male or female. There are numerous studies which show that both sexes evaluated males more favorably than females (Broverman, Broverman, Clarkson, Rosenkrantz & Vogel, 1970; Fernberger, 1948; Kitay, 1940; Kohlberg, 1966; MacBrayer, 1960; McKee & Sherriffs, 1957; Sherriffs & Jarrett, 1953; Smith, 1939).

2. Each diffuse status characteristic (i.e., gender) has associated with it a set of specific, evaluated characteristics (i.e., physical strength, analytic skill, mechanical ability, etc.). Each specific characteristic has evaluated states (strong or weak, analytic or not analytic, mechanical or not mechanical). Each state of the diffuse status characteristic has associated with it a set of states of specific characteristics (i.e., men are strong, analytic, and mechanical, and women are weak, not analytic, and not mechanical). Furthermore, states of characteristics which are associated with women are held to be less desirable than states of characteristics which are associated with men (Rosenkrantz, 1968).

3. To each state of the diffuse status characteristic there corresponds a distinct general expectation state having the same evaluation as the state of the diffuse status characteristic. Again, in the case of "gender" as the diffuse status characteristic, there are several studies in which both men and women agree that men are superior to women (Fernberger, 1948; McKee & Sherriffs, 1957) or that men possess higher intelligence (Fernberger, 1948; Sherriffs & Jarrett, 1953).

Under four scope conditions of the theory, Berger et al. claim that the behavior of individuals in a group may be predicted from the theory of diffuse status characteristics:

1. The group must be working on a valued task; that is, the task itself must have significance.

2. There must be some characteristic instrumental to the successful completion of the task; for example, if the task is building a radio, an instrumental characteristic might be "skill with electronics."

3. The individuals must be task-focused and collectively oriented; that is, they all have to work together on the task.

4. The individuals involved should differ on one and only one diffuse status characteristic.

The first three scope conditions are comparable to the conditions under which any decision-making group must operate, be the group Congress, a corporate board of directors, a school board, or a teaching team. It is this similarity between the scope conditions of the theory and the conditions of "real-life" decision making that leads us to claim that the theory has relevance to real life.

Berger et al. claim that under these four scope conditions, the relative power and prestige of group members will be determined by their relative status. For example, in the case of "sex" as the status characteristic, with the "male" state more valued than the "female" state, leadership of mixed-gender groups tends to fall to males, if members have no other basis for making a selective judgment.

This process occurs because of the attribution of either specific or general performance characteristics to group members in accordance with the state of their status characteristic. For example, in the case of "gender" as a diffuse status characteristic, if the task is fixing an automobile engine, then both men and women working together on this task would attribute to the men the specific performance characteristics necessary to complete the task. On the other hand, if the task is unrelated to any specific characteristic associated with the diffuse status characteristic, the theoretical assumption is made that the actors behave as if there were a specific performance characteristic operating. Thus, when there are no characteristics distinguishing teachers other than their gender, male teachers will be more active and influential than their female colleagues (Hall, 1972).

The theory asserts that a diffuse status characteristic will determine a group's observable power and prestige order in the following task situations:

1. If the diffuse status characteristic is the only social basis of discrimination; for example, a group of white, thirteen-year-old, middle-class students who know nothing about each other except that some are male and others female.

2. If the diffuse status characteristic is the only social basis of discrimination and has been activated; for example, the same situation as above, with the addition of unanimous agreement about male superiority.

3. If the diffuse status characteristic is a basis of social discrimination, has been activated, and any of its components are relevant to a skill that is instrumental to task completion; for example, the same situation as number two above, with the additional feature that everyone would agree that superior people (males) have more reasoning ability, the latter ability being instrumental to the task.

4. If the diffuse status characteristic is a basis of social discrimination, has been activated, and has relevant states of the instrumental skill assigned to it consistently; for example, the same situation as number two above, and also everyone has been told that males reason better than females.

5. If the diffuse status characteristic is one whose states have been culturally associated consistently with the instrumental skill and has been activated; for example, the same situation as number two above, and with everyone agreeing that in this culture males have superior reasoning ability.

Berger et al. (1972) argue that "the ordering effect of a status characteristic is independent of the amount of status definition originally occurring in [the task situation]" (p. 247). That is, the effect of the diffuse status characteristic in determining observable power and prestige is equally great in any of the five situations. Even though males and females have been differentially associated with distinct instrumental competencies, the diffuse status characteristic, "gender," is in no way distinguished from any other diffuse status characteristic in its ability to determine the power and prestige ordering of group members.

Hypotheses and Design

These considerations suggested three hypotheses:

1. Females in mixed-gender groups will occupy positions of power and prestige lower than those of males.

2. Females in mixed-gender groups will be less active than males in mixed-gender groups.

3. Females in single-gender groups will be as active as males in single-gender groups.

In addition to testing these hypotheses, exploratory work was conducted to determine the status structure of all-male vs. all-female groups, and to relate the activity of males and females in a game situation with their activity in a microteaching situation.

Each subject participated in three treatments (See Figure 1, Design of the Study):

a. A single-gender task-group treatment, in which the subjects worked together as a team to play a board game (The Game).

b. A mixed-gender task-group treatment, in which the subjects worked together as a team to play a board game (The Game).

c. A mixed-gender microteaching treatment, in which the subjects were students in a microteaching session.

The first two treatments controlled for the effect of order on the behaviors; the third treatment occurred after the first two. The original design of the study called for a total of 80 subjects, randomly assigned to treatment sequence. In the next section we will describe how the design was operationalized.

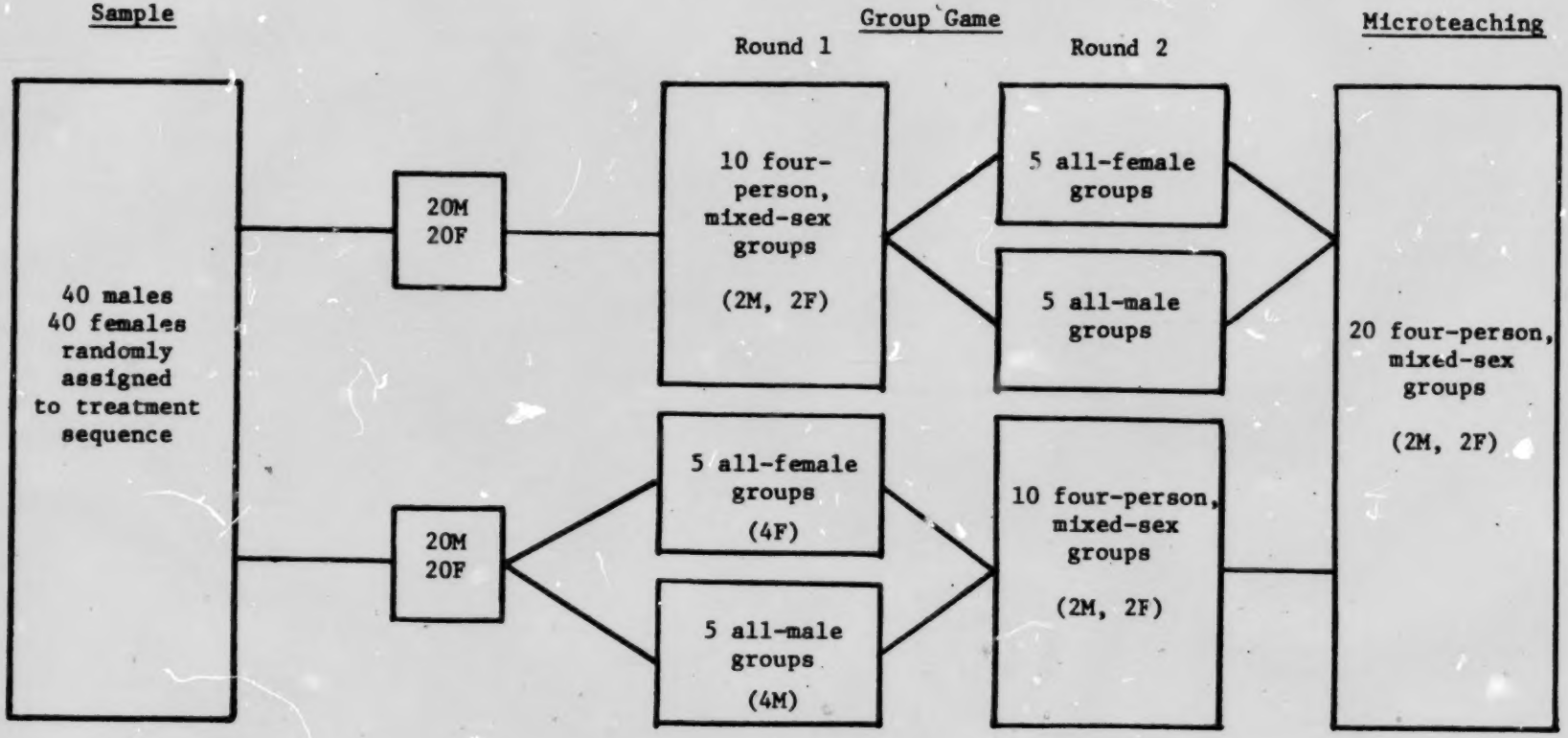


Fig. 1: Design of the Study

PROCEDURE

The study investigated how the effect of a female's status in a mixed-gender group of decision makers modified her leadership behaviors. It was proposed that 40 male and 40 female adolescents participate in a decision-making game, with each subject playing the game both in four-person groups of adolescents of the same gender and in mixed-gender groups. An additional condition of the study was that the four subjects who played the game in a mixed-gender group also be students together in a microteaching class.

Three main questions were raised: 1) What are the leadership behaviors of females and do they differ from those of males? 2) Do the behaviors and rates of activity of males and females differ when they work on a task in groups with same-gender peers or in groups of mixed gender? 3) Are the behaviors of males and females working on a nonacademic group task correlated with their behaviors in a simulated classroom? These questions were studied in a two-phase experimental design, in which all subjects participated in a group task with other subjects of the same sex, in a group task with other subjects of both sexes, and in a microteaching classroom with other subjects of both sexes.

Selection of Subjects

Subjects were recruited from local high schools in the mid-New Jersey area. At their respective high schools, volunteers were administered Group Embedded Figures Tests and a vocabulary test to screen for cognitive style and verbal ability. Next, students who were screened for age, race, gender, and verbal ability were administered individual rod and frame tests. Those students who scored in the upper and lower third of the rod and frame test distribution and

the upper and lower third of the group embedded figures test distribution were selected to participate in an ETS study of teacher-student match and mismatch in cognitive style. The remaining one-third of the distribution qualified for the present study.

All participating students enrolled in a 5-day social studies class as part of the teacher-student interaction study. A list of qualified students was compiled and sent to all the volunteers. They were requested to indicate which of the other students they knew, and how well they knew them. They were provided with envelopes in which to return the list, and were asked to indicate the dates they would be available for participating. Sixteen subjects who were unfamiliar with each other were selected for each of six consecutive weeks during the summer to participate in the game study and to attend a microteaching class. Subjects were paid for both screening tests and for participating in the study.

Experimental Procedure

Each week, 16 students who had not previously known each other were picked up by ETS vehicles and transported to the ETS research facility. They were briefly introduced to the facility and escorted to the four testing rooms where they played the first round of The Game. We arbitrarily decided that during weeks one, three, and five the groups would play the single-sex round of the game first and the mixed-sex round second; during weeks two, four, and six the procedure would be reversed. It was necessary for four groups to play the game simultaneously and then for the team members to switch, for the second round of The Game, to a new group.

After the first round of The Game, subjects filled out a brief post game questionnaire (Appendix D). They were then escorted to the second game room; no student played the second game with anyone he or she had played with before. After the second round they again filled out a postgame questionnaire. At this point the students entered the program of the social studies curriculum, and were administered pretests regarding the curriculum content. (Figure 2.)

On the next day the students began the microteaching sessions, which were 50 minutes long. The same group of students who played The Game in the mixed-gender group were together with a teacher to form a microteaching class. The middle half-hour of the first session was videotaped for coding student participation.

This study, while conceptually distinct, was operationally embedded in the Teacher-Student Interaction Study. The schedule of the embedded studies is shown in Figure 3.

Controlling the Experimental Environment for Sex Bias

Because the study sought to investigate the effect of female status on the emergence of female leadership (and, incidentally, the effect of male status on the emergence of male leadership), an experimental environment had to be created that was balanced as to males and females and hence initially equal in status for males and females. In order to accomplish this equalizing of the experimental situation, several steps were taken. First, the host experimenters were

Fig.

Legend
-Extreme field independent-field dependent classes
A
B
C
D

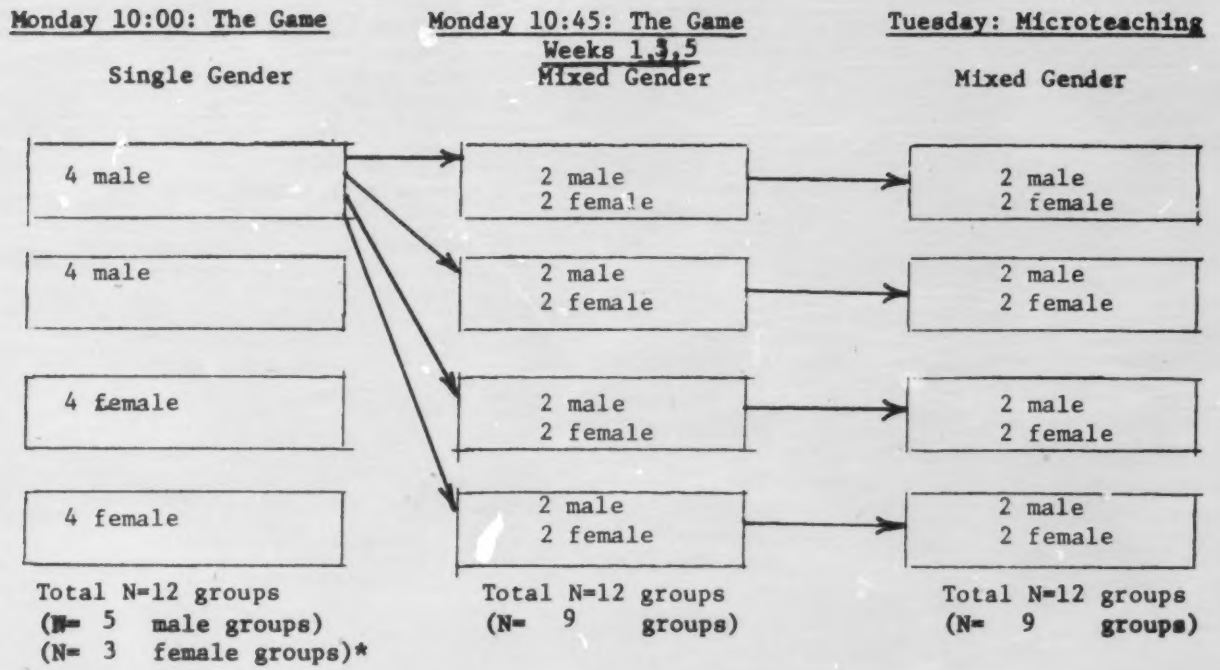
-Middle field independent-field dependent classes
AA
BB
CC
DD

-Subscript refers to class session

	Monday			Tuesday
9:00	A group arrives, sees film about Maya	B group arrives, takes cognitive tests 9:50		A_2 | AA_1
10:00	10:30 A group has first class, A_1	B group sees film about Maya	AA, BB, CC, DD groups arrive & play The Game	
11:00	11:20 A group administered cognitive tests	11:20 B group has first class B_1	11:20 AA, BB, CC, DD groups see film	B_2 | BB_1
12:00	A group leaves 12:10	12:10 B group leaves	12:10 AA, BB, CC, DD groups get cognitive tests	
1:00	C group arrives sees film about Maya	D group arrives takes cognitive tests 1:50		C_2 | CC_1
2:00	2:30 C group has first class C_1	D group sees film about Maya		
3:00	3:20 C group administered cognitive tests	3:20 D group has first class D_1		D_2 | DD_1
	C group leaves			

2: Weekly Schedule

Wednesday		Thursday		Friday		
A_3	AA_2	A_4	AA_3		AA_4 9:50	BB group takes cognitive tests 9:50
				A,B,C,D groups administered post tests	AA group takes post tests	BB_4 10:40
B_3	BB_2	B_4	BB_3	11:30 A,B,C,D groups play The Game	11:20 AA group takes cognitive tests	BB group takes post tests
				12:45 A,B,C,D leave	12:10 AA group leaves	12:10 BB group leaves
C_3	CC_2	C_4	CC_3		CC_4 1:50	DD group takes cognitive tests 1:50
					CC group takes post tests	DD_4 2:40
D_3	DD_2	D_4	DD_3		3:20 CC group takes cognitive tests	DD group take post tests 27
					4:10 CC leaves	4:10 DD leaves



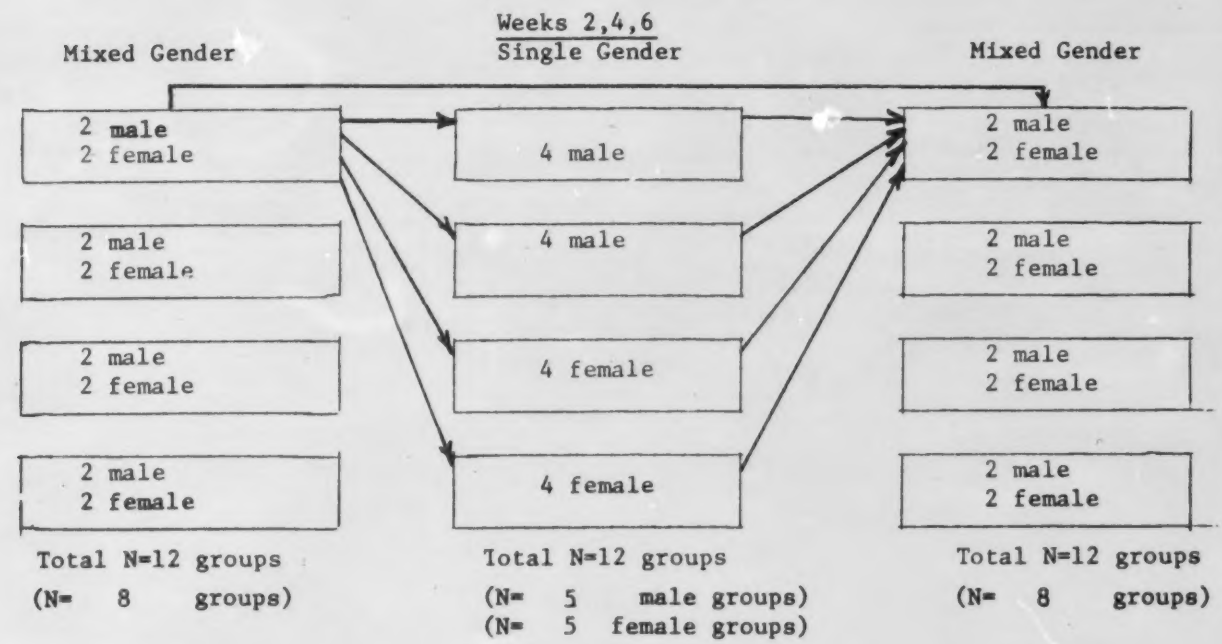


Fig. 3. "Middle Range" Field Independent-Field Dependent. N=24 Single-Gender Game Groups, 24 Mixed-Gender Game Groups, 24 Mixed-Gender Classes.

(*technically sound tapes, capable of being coded, in parentheses)

selected so that there were two male and two female host experimenters. Second, the tape-recorded instructions for The Game were made using three separate voices: a female voice, a male voice, and an alternating male and female voice. Third, the single-gender groups played with a host experimenter of the same gender, and listened to a tape of the instructions which were spoken by the same-gender voice; the mixed-gender group listened to the instructions given by the alternating male-female voices.

The Task

The group game is an instrument developed at Stanford University and designed to generate interaction among the team members. The Game is played by four players who are instructed to act as a team, arriving at a series of group decisions. The object of The Game is to move a token from one side of the game board to the other side, accumulating points while reaching the goal in fourteen rolls of the dice. An incentive is a hypothetical "high score" which the team is encouraged to surpass. The Game has been very attractive to adolescents; youngsters who have played one "round" of The Game generally want to play a second "round." The Game has been previously used by Cohen (1968); Cohen, Lohman, Hall, Lucero and Roper (1970); Cohen and Roper (1971); Lohman (1970); Cohen, Lockheed and Lohman (1976).

The instructions for The Game were recorded on tape and played by the host experimenter. While playing the tape, he or she underscored the major points of the instructions by showing examples on the game board. There are three important features of The Game: first, it requires collective decision making; second, it is apparently valued, since it generates a good deal of discussion;

third, the task is ambiguous and without any rational "best strategy." Thus it permits many alternate suggestions which must be resolved by a group decision, and it encourages the emergence of the power and prestige structure of the group.

Data Collection

The sources of data for this study were the screening tests administered to the students, self-report data on school, age, and gender, observation of race, videotape records of The Game and the microteaching class, and post-meeting questionnaires filled out by the subjects.

Measures of cognitive style. Two measures of cognitive differentiation were used in this study. The Group Embedded Figures Test (GEFT) developed by. P. Oltman, E. Raskin, and H. Witkin (1971) is designed to test an individual's ability to locate a simple geometric figure in a complex design. This test is scored by counting the number of simple figures found within a specified time.

The portable Rod and Frame Test (Oltman, 1968) is designed to identify the extent to which an individual is able to differentiate the vertical axis of a "rod" from a tilted "frame" in which it is located. An individual's score on this test is the number of degrees between true vertical and the reported vertical of the rod within the frame, summed over a number of trials.

Measure of verbal ability. The test used was the Extended Range Vocabulary Test, Test V-3 (French, Ekstrom, & Price, 1963). This is a timed test of two six-minute parts having 24 items per part; each item is multiple choice with five options.

Observation of task oriented acts. Two coders, one male and one female were trained to code the videotapes. Each subject's verbal responses were recorded in four categories (Type of Act): (a) performance outputs, (b) action opportunities, (c) positive evaluation, and (d) negative evaluation. For a description of Type of Act and rules for scoring, see Appendix E, Manuals for Observers.

Observation of influence. The influence measure consisted of identifying the path decided upon by the group for each turn and then identifying the person who initially suggested the path. This person received full credit for influencing the decision, whether or not she or he had defended the suggestion.

Post-game questionnaire. Differing from previous studies of this nature, the postgame information was collected by a questionnaire rather than by an interview. This procedure was in part adopted because of the greater than usual maturity of the subjects and in part because of the tight time-schedule and limited staffing of the present study. The post-game questionnaires for Round 1 and Round 2 of the game are presented in Appendix D. Briefly, the questionnaire first asked the subjects to indicate how important winning the game was to them. Then the subjects were asked to rank-order the members of their group according to who had the best ideas in The Game, who did the most to guide and direct the group while playing The Game, whom they liked best, and whom they disliked most. They were then asked to identify one person who stood out as leader of the group. They were also asked to indicate their feelings about participating in the group after the first round of The Game. Females were asked whether they thought other girls would like The Game, and males were asked whether other boys would like it.

Both male and female subjects were asked to indicate whether boys or girls would like The Game more. After the second round of The Game, the subjects were given an opportunity to name The Game. Finally they were asked whether they had ever felt at a disadvantage, whether anything had made them angry, whether they would consider coming back to help with another study, and whether they had any comments to make about the experience.

Interobserver Reliability

One male and one female coder were trained according to the observation system described in Appendix E (Manuals for Observers I and II). At the time of training the coders were able to reach an acceptable level of agreement as to both total number of acts initiated by each subject in a group and totals for each type of act occurring in the group (χ^2 tests: coder by type of act and coder by subject; $p \leq .90$). In subsequent checks, however, reliability was lost on "type act." Because one coder was unable to return for retraining within the time period available, it was decided to omit "type act" from the reported findings. Subsequent double codings on acts initiated by subject showed high correspondence between coders. Of 11 tapes so coded, or 1/9 of all tapes and 1/8 of all technically sound tapes, 10 met the $p < .90$ criterion for determining whether disagreement in the observers scoring could reasonably be attributed to chance; the remaining tape was $p < .89$.

III

EFFECTS OF GROUP COMPOSITION: ACTIVITY

Absolute Initiation

On the average, how active were male groups, female groups, and mixed groups? Table 3 shows that the mean number of task-oriented acts initiated by four-person male groups and four-person female groups was not significantly different when naive and experienced groups were combined. Four-person mixed-gender groups, on the other hand, are significantly more active than all-male groups.

Table 3

Means and Standard Deviations of Total Task-Related Acts Initiated in Four-Person Groups

Group type	Mean $\bar{x}$	S.D.		
Female (N = 8)	91.4	(12.77)	n.s.	n.s.
Male (N = 10)	82.5	(26.88)	$t = 2.40$ ($p < .05$)	
Mixed (N = 17)	103.5	(18.56)		

When the mean number of acts initiated by males and females in single-gender groups is compared to means for each gender in mixed-gender groups, differences are found (Table 4). While males and females again show no differences in single-gender groups, males are significantly more active in mixed-gender groups than in single-gender groups. Thus, it appears that the greater activity of mixed-gender groups is largely accounted for by the greater activity of the males.

Table 4

Means and Standard Deviations of Individual Task-Related Acts Initiated by Males and Females in Four-Person Groups

	Mean $\bar{x}$	S. D.	
Female			
All-female group (N = 32)	23.31	(8.63)	n.s.
Mixed-gender group (N = 34)	24.41	(9.23)	
Male			
All-male group (N = 40)	22.13	(11.88)	$t = 2.76$ ($p < .001$)
Mixed-gender group (N = 34)	27.32	(12.18)	

Although there were not sufficient single-gender groups to divide according to whether they were naive or experienced, there were sufficient mixed-gender groups for such analysis. Table 5 reports the mean number of acts initiated by males and females in mixed-gender groups according to whether the groups were naive or experienced. Experienced groups were composed of individuals who had just played The Game in a single-gender group.

Table 5

Means and Standard Deviations of Individual Task-Related Acts Initiated by Males and Females in Naive and Experienced Mixed-Gender Four-Person Groups

	Mean $\bar{x}$	S. D.	
Female			
Naive (N = 16)	19.93	(6.28)	$t = 2.876$ $p < .005$
Experienced (N = 18)	28.38	(9.76)	
Male			
Naive (N = 16)	28.31	(9.92)	n.s.
Experienced (N = 18)	26.44	(14.04)	

Table 5 makes it obvious that experience increases the activity of the females, but it slightly decreases the activity of the males. Therefore, although males may on the average be more active in mixed-gender groups than in all-male groups, it may also be the case that experienced females are more active in mixed-gender groups than in all-female groups.

In an attempt to determine the extent to which experience affected the activity of the males and females in mixed-gender groups, leaving aside for the moment the question of all-male or all-female groups, a regression analysis was performed, using individual acts initiated as the dependent variable and as the predictor variables, individual measures of cognitive style, verbal ability, and grade level; group measures of experimenter sex and individual seating location; and, finally, a dummy variable for experience. The results are reported in Table 6.

Table 6 confirms what had been previously implied: that the experience of playing The Game in an all-female group significantly increased the number of acts initiated by females when playing The Game in a mixed-gender group. This experience did not, however, affect the males. Furthermore, neither the personal characteristics of cognitive style, verbal ability, or grade in school, nor the experimental conditions of seating position or sex of the host experimenter had any relationship to the number of acts initiated by either males or females. That this was the case confirms only that the procedures to screen subjects and assign them randomly to the experimental condition were successful, but not that such variables might not be correlated with the dependent variable.

Table 6

Regression Results: Estimate of the Contribution of Cognitive Style, Verbal Ability, Grade, Seating Position, Sex of Host Experimenter, and Experience, to Total Verbal Initiation of Subject, by Sex of Subject

	Total Verbal Initiation	
	Female	Male
Independent Variables		
Rod and Frame Test	-0.0129	.0041
	(.0577)	(.0953)
Vocabulary Test	0.0795	.1870
	(.2152)	(.3806)
Grade in School (10 = 0; 11 = 1)	4.4711	2.6029
	(3.1266)	(5.2224)
Seating Position (outside = 0 inside = 1)	-3.6248	1.4735
	(2.8447)	(4.7500)
Sex of Host Experimenter (1 = female 2 = male)	-3.8621	.4696
	(2.8982)	(4.8314)
Experience (1 = naive 2 = experienced)	8.4773*	-1.8351
	(2.9800)	(4.6420)
Residual	16.7754	23.3232
R - square	.372	.038
F (total equation)	2.6691	.1772
Degrees of freedom		

*t = 2.8447 (27 df)
(p < .005)

It is noteworthy that prior experience, while beneficial to females, was not detrimental to males. Hence, interventions based on this model should not be eschewed out of fear of negative consequences to the males, but rather encouraged for the positive results for the females.

Leadership Rank within Groups

The most direct method of assessing the relative status of males and females in mixed-gender groups is to rank the members of each group according to the number of task-related acts each person initiates. By looking at the number of males and females holding each rank we were able to determine whether there was an equal probability for males and females to hold each rank.

Table 7 reports the number of males and females holding each rank in naive and experienced groups. In naive groups the males held the highest leadership positions, holding ranks 1 and 2 in the power and prestige order. Females held the lower two ranks quite uniformly.

In experienced groups, however, the bulk of the females hold middle ranks in group status, and the males hold the extreme positions. Experiencing the decision-making situation with one's own gender prior to the experience with a mixed-gender group was seen to have positive effects for females, mixed effects for males, in determining their subsequent status.

Percent Contribution to Task

In this section we assess the quantity of status discrepancy between males and females in mixed-gender groups and within single-gender groups. Following

Table 7

Frequency of Males and Females Holding Each Rank in Task-Related Interaction for Naive and Experienced Groups

Rank in group	Females: Number of groups	Males: Number of groups
	Naive groups	
1 or 1.5	1	7
2 or 2.5	1	7
3 or 3.5	8	0
4	6	2
	Experienced groups	
1 or 1.5	3	6
2 or 2.5	8	3
3 or 3.5	5	2
4	2	7

analytic strategies previously used in considering group data, in this section we identify four types of group members. In single-gender groups we rank the group members according to the number of acts each initiated within the group. Thus, for each group, there will be a most active person, a second most active person, a third most active person, and a fourth most (i.e., least) active person. Within mixed-gender groups, we identify the more active female and the less active female, the more active male and the less active male.

In order to gain comparability across groups, we express the level of activity as a percent of the total activity of the group. Although the numbers of the single-gender groups are not sufficient to present separately by experience, the mixed-gender groups are so presented. In each case, the means and standard deviations are of percentages rather than of raw initiation (Figure 4).

Because the measure of activity for an individual or type of group member is dependent upon the other group members it is difficult to make statements regarding the significances of the observed differences between the four group types. To begin to rectify this problem, Dr. Ledyard Tucker devised a simulation of a four-person task-oriented discussion.

A set of 100 simulated, random-group, interaction sessions were run in order to "Monte Carlo" a hypothetical distribution of activity in four person groups. The assumptions under which these sessions were run were minimal. Speech lengths were randomly determined and varied from two seconds to five minutes. Speakers were allowed to speak twice in succession. Groups were allowed to run 30 minutes. The determination of the parameters A and B is as follows:

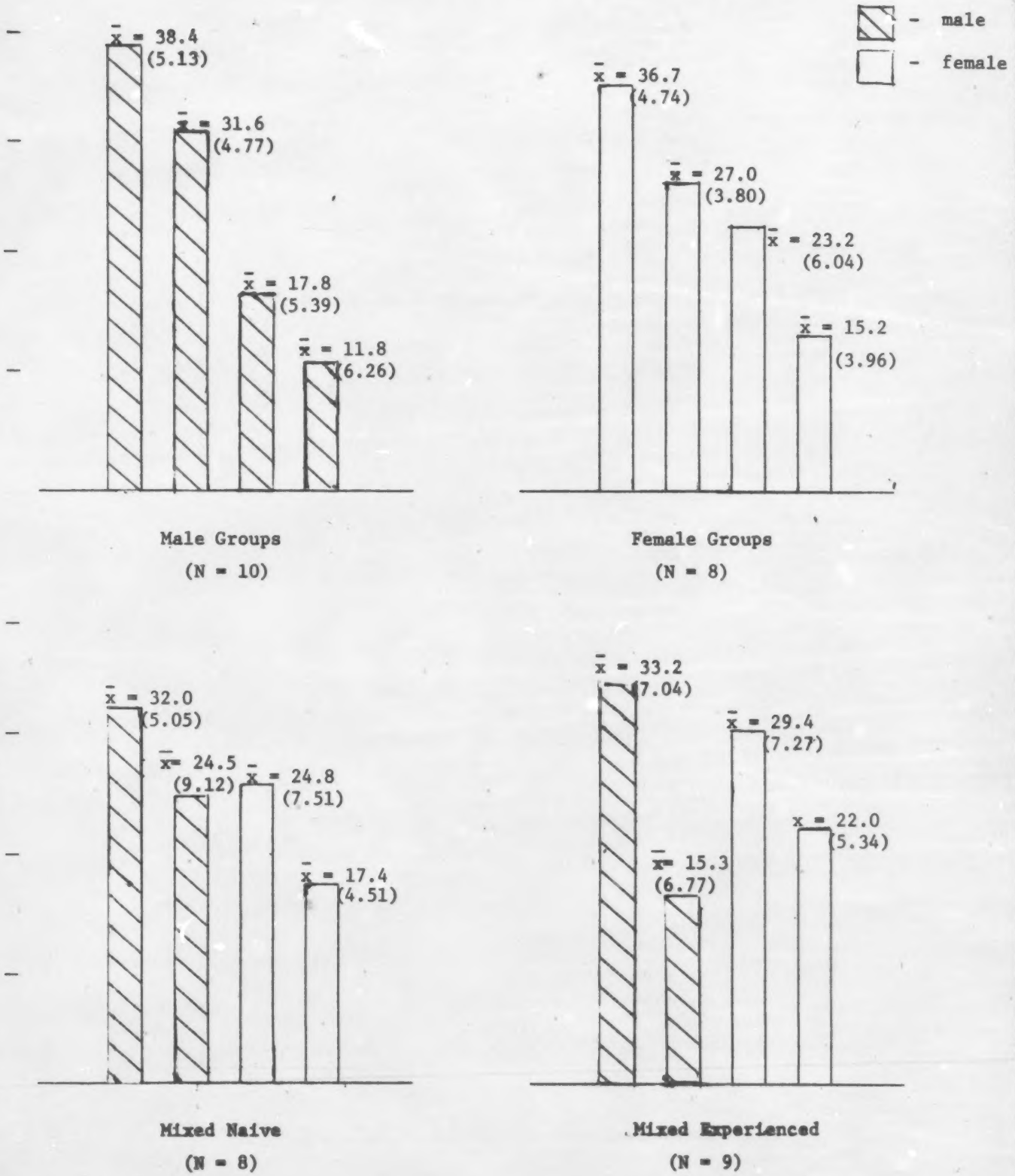


Fig. 4. Mean acts initiated by More Active Male, Less Active Male, More Active Female, Less Active Female in Mixed-Gender Groups and By Persons Ranked 1-4 in Single Gender Groups.

Short speech SP_s	Long speech SP_l	log SP_s	log SP_l	A	B
2/60	,5	-1.47712	.69897	.8107	-.8959

where $A = \log SP_l - \log SP_s$; $A = A^* \ 2.302585/\ 6.1804$

$B = \log SP_l - \log SP_s$; $B = B^* \ 2.302585/\ 2$

Means and standard deviations of percentage of utterances of statistical individuals, ordered by magnitude of measure in session, are given in Table 8, across the top of the table. Along the side of the table are similar measures for mixed-gender and single-gender groups. Separate t tests were run comparing the observed means with the hypothetical means. A summary of the results is found in the body of the table.

To summarize briefly, in naive groups, the more active male is as active as the most active statistical individual, the less active male is as active as the third most active statistical individual, and the less active female is as active as the fourth most active statistical individual; the more active female is both more active than the third most active statistical individual and less active than the second most active statistical individual. Experienced groups differ in this pattern, however. While the more active male is still as active as the most active statistical individual, the less active male has become significantly less active than any of the statistical individuals. The more active female has become more active than the second most active person, but

Table 8

T-test Comparisons of Mean % Acts Initiated Derived from A Monte Carlo Distribution and from Observed Groups

			Monte Carlo Data (N = 100 groups)			
			Most Active Person $\bar{x}$ = 32.17 (sd = 3.22)	Second Most Active Person $\bar{x}$ = 27.25 (2.66)	Third Most Active Person $\bar{x}$ = 22.53 (2.48)	Fourth Most Active Person $\bar{x}$ = 18.04 (3.51)
Observed Activity						
Mixed-gender groups-R1 (N = 8)						
More active male	32.9	(5.05)	.59 n.s.	5.30 ***	10.27 ***	11.06 ***
Less active male	24.5	(9.12)	5.32 ***	2.19 *	1.59 n.s.	4.24 ***
More active female	24.8	(7.51)	5.55 ***	2.06 *	1.99 *	4.68 ***
Less active female	17.4	(4.51)	12.02 ***	9.44 ***	5.21 **	.48 n.s
Mixed-gender groups-R2 (N = 9)						
More active male	33.2	(7.04)	.81 n.s.	5.31 ***	9.90 ***	11.13 ***
Less active male	15.3	(6.77)	13.35 ***	10.80 ***	6.84 ***	2.03 *
More active female	29.4	(7.27)	2.15 *	1.90 *	6.33 ***	8.28 ***
Less active female	22.0	(5.34)	8.50 ***	5.08 ***	.54 n.s.	2.89 ***
All-male groups (N = 10)						
Most active	38.4	(5.13)	5.52 ***	11.45 ***	17.17 ***	16.81 ***
Second	31.6	(4.77)	.51 n.s.	4.55 ***	9.99 ***	11.32 ***
Third	17.8	(5.39)	12.62 ***	9.61 ***	5.05 ***	.20 n.s
Fourth	11.8	(6.26)	17.29 ***	15.00 ***	10.91 ***	4.95 ***
All-female groups (N = 8)						
Most active	36.7	(4.74)	3.60 ***	8.75 ***	13.83 ***	13.78 ***
Second	27.0	(3.80)	4.23 ***	.24 n.s.	4.58 ***	6.78 ***
Third	23.2	(6.04)	6.79 ***	3.51 ***	.64 n.s.	3.65 ***
Fourth	15.2	(3.96)	13.81 ***	11.55 ***	7.45 ***	2.14 *

* $p < .05$ ** $p < .01$ *** $p < .001$

still less active than the most active person, while the less active female has become like the third most active hypothetical person. Experience with a same-gender group may therefore increase the probability of females' emerging as leaders in mixed-gender groups.

Males and females may be seen to operate differently in groups from each other. The all-male groups appear to have two individuals who are as active or are significantly more active than the hypothetical most active individual, and two individuals who are as active or significantly less active than the less active hypothetical individual. Thus, all-male groups may be characterized as polarized, with two males struggling for leadership and two males assuming relatively inactive roles.

The all-female groups, on the other hand, have a well-defined leader who is significantly more active than the most active statistical individual, and two middle individuals who fall within the range of activity expected for the second and third most active individuals; the least active female is significantly less active than the least active hypothetical individual, but the level of significance is marginal. Female groups, therefore, appear to conform rather closely to the pattern of interaction that was produced by the sessions of simulated group interaction; male groups, on the other hand, are much more polarized than expected.

Group Structure

From the previous section we have seen that male groups and female groups differ in the extent to which their behavior matches that of statistical individuals. The implication is that the status space between individuals is

greater in all-male groups than in all-female groups. Status space is defined as the difference between the percentages of task-oriented acts initiated by different group members. If the structure of male and female groups is different, an analysis of variance of these differences should point out where the structure of male and female groups differs.

Table 9 reports the ANOVA results.

While the overall space between most active and least active person in female groups is not significantly different from that in male groups, there are internal structural differences. There is a significantly greater space between the most active male and the third most active male than between comparable females. Furthermore, there is a greater separation between the second and third most active males than between the second and third most active females. This separation is again reflected in the status space between 2nd and 4th most active males and females.

Table 9

Group Structure: ANOVA of Differences in Percent Task-Oriented Acts Initiated by Persons Ranked 1 to 4 in Order of Initiation in All-Male and All-Female Groups

	Group type			
Difference between persons	Female	Male	t	p
R1 - R2	9.67 (6.39)	6.74 (4.11)	1.18	n.s.
R1 - R3	13.48 (9.06)	20.54 (10.06)	-1.54	.10
R1 - R4	21.48 (7.09)	26.53 (10.12)	-1.19	n.s.
R2 - R3	3.81 (3.21)	13.80 (9.18)	-2.92	.005
R2 - R4	11.81 (7.35)	19.79 (10.52)	-1.82	.05
R3 - R4	7.99 (9.09)	5.99 (7.31)	0.52	n.s.

IV

EFFECTS OF GROUP COMPOSITION: INFLUENCE

Successful Influence

The measure of successful influence for each individual is simply the number of paths the person first suggests which are ultimately selected by the group. In other words, the first person suggesting a "winning" path is given full credit, despite the fact that other individuals may be largely responsible for defending that path. Since this figure, summed across members of each group, will always be equal to the number of turns required to play the game, there is by definition no difference between male and female groups as a whole on this measure.

Table 10 presents the mean influence of the group members, ranked according to their overall rate of initiation within the group, for male and female groups. Uneven numbers of subjects reflect ties. This table also presents the relative influence of males and females in mixed-gender groups. Both sets of data are reported for naive (Round 1) and experienced (Round 2) groups.

The number of successful influence attempts made by the more and less active male and female in mixed-gender groups is given in Table 11. Experience appears to increase the probability of the more active males being influential at the expense of the least active male; experience does not appear to affect either female. Overall, influence is fairly equally shared by males and females in mixed-gender groups.

Table 10

Mean Absolute Influence of Persons Ranked 1 to 4 on Acts Initiated in Naive and Experienced Single-Gender Groups and of More and Less Active Males and Females in Naive and Experienced Groups

Group type	Naive	N	Experienced	N
All Female				
R1	3.33 (1.15)	3	5.40 (1.95)	5
R2	2.67 (1.15)	3	4.83 (1.83)	6
R3	4.00 (1.73)	3	3.00 (2.55)	5
R4	3.00 (2.65)	3	1.25 (.96)	4
All Male				
R1	4.00 (2.45)	5	4.80 (2.95)	5
R2	6.40 (2.88)	5	5.80 (4.27)	5
R3	1.17 (.75)	6	3.00 (2.37)	6
R4	1.25 (.96)	4	0.75 (.96)	4
Mixed gender				
F1	4.38 (3.07)	8	4.00 (1.32)	9
F2	2.38 (1.60)	8	2.11 (2.37)	9
M1	3.25 (1.83)	8	5.33 (2.24)	9
M2	3.63 (2.45)	8	2.00 (2.00)	9

Table 11

Number of Successful Influence Attempts Made by More and Less Active Females and Males in Naive and Experienced Mixed-Gender Groups

	More active		Less active	
Naive groups (N = 8)				
Female players	35	(32%)	19	(17%)
Male players	26	(24%)	29	(27%)
Experienced groups (N = 9)				
Female players	36	(30%)	19	(16%)
Male players	48	(40%)	18	(15%)

Relationship between Activity and Influence

To what extent is activity related to influence? In order to answer this question individuals were ranked within groups on both activity and influence. Those who were first or second in rank were identified as "high," while those ranking third or fourth were identified as "low." Four separate χ^2 tables were constructed: single-gender male and female groups, combining naive and experienced groups, and separate naive and experienced mixed-gender groups. In all cases (Table 12) activity and influence were found to be related.

Patterns of Influence within Groups

Although there are no sex differences on the mean influence scores it is clear that males are disproportionately represented among the most influential (ranks 1 or 2 in influence), while females are disproportionately represented among the least influential (ranks 3 or 4 in influence). (Table 13.) When the results are divided to take into account the order effect noted previously, it is clear that experienced groups are much less likely than naive groups to have the least influential place fall almost exclusively to females. While 73 percent of the males in naive groups held ranks of 2.5 or higher, only 50 percent of the females did so. In experienced groups, 56 percent of the males and 50 percent of the females held ranks of 2.5 or higher in influence.

Table 12

Number of Individuals Ranked High and Low on Acts Initiated and High and Low on Successful Influence, for Each of Four Possible Combinations of Activity and Influence

A. Naive Mixed-gender groups

Influence \ Initiation	High	Low
High	13	6
Low	3	10

$\chi^2 = 6.348$ $p < .02$

B. Experienced Mixed-gender groups

Influence \ Initiation	High	Low
High	13	6
Low	7	10

$\chi^2 = 2.697$ $p < .10$

C. All-Male groups

Influence \ Initiation	High	Low
High	16	7
Low	4	13

$\chi^2 = 8.29$ $p < .01$

D. All-Female groups

Influence \ Initiation	High	Low
High	13	7
Low	4	8

$\chi^2 = 3.02$ $p < .10$

Table 13

Frequency of Males and Females Holding
Each Rank in Influence for
Naive and Experienced Groups

Rank in group	Females Number of Groups	Males Number of Groups
	All mixed-gender groups (N = 17)	
1 or 1.5	7 (41%)	10 (59%)
2 or 2.5	10 (48%)	11 (52%)
3 or 3.5	8 (50%)	8 (50%)
4	9 (69%)	4 (31%)
	Naive (N = 8)	
1 or 1.5	4 (50%)	4 (50%)
2 or 2.5	4 (36%)	7 (64%)
3 or 3.5	3 (50%)	3 (50%)
4	5 (83%)	1 (17%)
	Experienced (N = 9)	
1 or 1.5	3 (33%)	6 (66%)
2 or 2.5	6 (60%)	4 (40%)
3 or 3.5	5 (50%)	5 (50%)
4	4 (57%)	3 (43%)

Another way of considering the extent to which influence is shared between males and females in groups is to see whether the group is dominated by either females or males. Several patterns of dominance may be identified. Following Cohen and Roper (1972), we have used the conventions below to identify patterns of dominance or shared power:

Dominance patterns (male or female)

Single: 1 > 50% of all successful influence attempts;
2 < 35%

Double: 1 > 35%; 2 > 25%; 3 < 20%

Triple: 1 > 25%; 2 > 25%; 3 > 20%; 4 < 20%

Equal status

1 > 20%; 2 > 20%; 3 > 20%; 4 > 20%

Shared power

Same as "Double" above, but with a female and a male ranking highest in successful influence.

From Table 14 it is clear that there were no equal-status groups observed among the mixed-gender groups. Most of the groups were dominated by males. Separating the results by degree of experience, we note that while naive groups are either dominated by females or by males, experienced groups tend to have the power shared between the females and males.

Table 14

Probability of Various Group Patterns of Successful Influence

	Patterns				
	Female Dominance %	Male Dominance %	Shared Power %	Equal Status %	N
Naive groups	50%	50%	0%	0%	8
Experienced groups	11	33	56	0	9
Total mixed-gender groups	29%	41%	29%	0	17

V

INTERPRETATION OF MAJOR EFFECTS

What are the implications of the major findings reported above? Summarized, these are:

1. There is no difference between the general activity of all-female groups and all-male groups.
2. The status structure of all-female groups differs from that of all-male groups, in that all-male groups are more polarized than are all-female groups.
3. Naive mixed-gender groups are dominated by males; mixed-gender groups composed of individuals who have experienced the game in a single-gender condition show a more nearly equal distribution of activity between females and males.
4. Activity and influence are highly related for all types of groups.

These findings suggest that the systematic emergence of males as leaders in mixed-gender groups may not be simply accounted for by either biological or sex-role theories. It is evident that females in all-female groups are as task-oriented in their behavior as are males in all-male groups. It is when naive males and females are brought together in mixed-gender groups that males are more active than females. Thus, the behavior of males and females in mixed-gender task oriented groups follows what is predicted by expectation state theory: the males emerge as leaders because of their assumed competence at the task.

On the other hand, when the females have had an opportunity to engage in the task with other females first, they are much more active than naive females. Expectation theory asserts that if a prior specific performance characteristic is not associated with any individual member of the task group, then the diffuse status characteristic will predict emergent leadership. However, if the males and females who experienced the game first in groups of their own sex developed a specific expectation about their own competence vis-à-vis that task, then the status characteristic differences would not be powerful in determining emergent leadership.

Carrying this analysis one step farther, we may find some useful explanatory information in the differences between the status structure of all-male groups and all-female groups. We noted that the male groups tended to have two active males and two inactive males, whereas the female groups tended to have less status differentiation among group members. We have also noted a slight absolute decline in male activity from naive to experienced groups, corresponding with a shift in the less active male's position as the second-most-active person to the fourth-most-active person. Given these two observations, we may wish to speculate that the structure of the all-male group creates a situation in which two males develop positive evalutions of their own competence vis-à-vis the task, and two males develop negative self-evaluations. On the other hand, the structure of the female groups is such that three members, and possibly four, develop positive self-evaluations. Thus, the prior experience for the females may be beneficial to all, but the prior experience for the males may be a negative experience for half the group.

The consequence of discovering a strong order effect in the direction of increasing the activity of females is to suggest that the natural pattern of male leadership is more malleable than might have been expected. This finding implies that treatments designed to increase the likelihood of females emerging as leaders may be rather simple to construct.

The finding also implies that first experiencing, in groups of one's own gender, those activities which might occur in mixed-gender situations is a powerful treatment in itself. However, for the effect to hold, the activities must be identical to those encountered in mixed-gender groups.

VI
POST-GAME QUESTIONNAIRE

Perception of Leadership

In the previous sections we have documented how males tended to dominate naive mixed-gender groups, but to share activity and influence with females in experienced groups. Although there was observable balance of status in the experienced groups, the perception of leadership by the group members clearly favored males for both naive and experienced groups.

After each game session (Round 1 or Round 2), the group members were asked to rank the four members of the group, thus including themselves, for who had the best ideas in the game and who did most to guide and direct the group, and to choose the one who in their opinion was the overall leader of the group.

Table 15 presents the mean ratings received by the more-active male and more-active female from the other group members. It is clear that in the naive mixed-gender groups, the more-active male was perceived more favorably than the more-active female. On the other hand, for the experienced group this difference did not exist. This is consistent with the level of activity of these types of group members under the two conditions.

Table 15

Mean Rank Given to More-Active Female and More-Active Male by Other Group Members in Mixed-Gender Groups, by Experience of Group

	Naive Groups		Experienced Groups	
	More-Active Female	More-Active Male	More-Active Female	More-Active Male
A. Who had the best ideas in the game?	2.64 (1.15)	1.97 (1.24)	2.11 (1.05)	1.86 (1.01)
B. Who did most to guide and direct the group?	3.00 (0.92)	2.09 (1.19)	1.97 (.85)	2.03 (1.03)

However, when the group members were asked to identify who stood out as a leader, few identified females. As Table 16 shows, of the total votes cast for leader in both naive and experienced groups, males received an overwhelming majority. Admittedly, the naive group members chose males with greater frequency than did the experienced group members, but in both cases more than 70% of the votes went to males.

Table 16

Votes Received by Males and Females in Mixed-Gender Groups in Response to Question: "Overall, who would you say stood out as leader of the group?"

	Naive Groups	Experienced Groups
Votes received by		
Males	34	30
Females	7	9
Omit	1	3

How do the more-active males perceive the more-active females and how do the more-active females perceive the more-active males? Table 17 presents the mean rankings of the more-active female by the more-active male in her group, and of the more-active male by the more-active female in his group. This information is presented for both naive and experienced groups. The evaluations of males and females by females and males seem quite balanced, with the exception of "guide and direct" for the more-active female in the inexperienced groups. The latter is perceived as being less influential than the more-active male, a perception that corresponds with both her lower observed activity and influence.

Table 17

Mean Rank Given to More-Active Female by More-Active Male and to More-Active Male by More-Active Female in Mixed-Gender Groups by Experience of Group

	Naive Groups		Experienced Groups	
	Female by Male	Male by Female	Female by Male	Male by Female
A. Who had the best ideas in the game?	2.09 (1.16)	2.00 (1.28)	1.78 (1.03)	1.80 (.87)
B. Who did most to guide and direct the game?	2.91 (.90)	2.09 (1.24)	2.10 (.70)	2.00 (1.10)

Liking

How well were the more-active males and females liked by the other members of their team? Table 18 gives the mean rankings received by more-active males and females in response to the question "Which person did you like the most, second..."

Table 18

Interpersonal Attraction
Mean Rank Received by More-Active Male and More-Active Female in Mixed-Gender Group, by Experience of Group

	Naive Groups		Experienced Groups	
	More-Active Female	More-Active Male	More-Active Female	More-Active Male
"Which person did you like the most?" (1 = like)	1.87 (0.83)	2.10 (0.78)	1.61 (0.77)	2.03 (0.72)
"Which person did you dislike the most?" (1 = dislike)	2.07 (0.87)	1.96 (0.82)	2.46 (0.76)	2.04 (0.75)

It is evident that the more-active females in the experienced groups were liked more and disliked less than the more-active males in either naive or experienced groups and than the more-active females in the naive groups.

Table 19 shows, moreover, that the more-active female in the experienced groups was liked better by the more-active male than he was by her. Furthermore, the more-active males and females in the experienced groups seemed to be more positively disposed toward each other than similar pairs in naive groups. This may, of course, reflect the extreme imbalance of power and prestige between males and females in the naive groups.

Table 19

Interpersonal Attraction
Mean Rank Received by More-Active Female/Male from More-Active Male/Female in Mixed-Gender Groups, by Experience of Group

	Naive Groups		Experienced Groups	
	Female by Male	Male by Female	Female by Male	Male by Female
"Which person did you like the most?" (1 = like)	2.00 (0.77)	2.20 (0.75)	1.44 (0.68)	1.80 (0.60)
"Which person did you dislike the most?" (1 = dislike)	2.00 (0.82)	1.75 (0.83)	2.67 (0.67)	2.50 (0.71)

It is nevertheless clear that in the experienced groups, active females tended to be liked better than active females in the naive groups, both by active males and by the group in general. It is also the case that the active females were more favorably disposed toward the active males in the experienced groups. One may conclude that there was greater friendliness between the experienced males and females than between the naive males and females.

Attraction to the Game

Central to the theoretical basis for this study is the requirement that the task be valued. While 82 percent of the females and 73 percent of the males responded that winning The Game was somewhat important, important, or very important, a significant difference was found in the male responses depending upon the composition of the group.

The bulk of both female (56%) and male (54%) subjects, answering after the first round of The Game, responded that winning The Game was somewhat important. For female respondents, there was no difference in the importance of The Game, according to the sex composition of the team. For males, however, the gender of the team was a critical factor in determining significance. Of the males who played The Game first in a mixed-gender group, only 16 percent felt that winning The Game was either very important or important. Of the same males, responding after playing The Game with a group of males, 32 percent felt that winning The Game was important or very important. This difference is significant ($\chi^2 = 18.03$, $p < .001$). Figure 5 shows this shift graphically.

Subjects were also asked, "How do you feel about participating in this group?" There were no differences according to the sex of the respondents for this question, but the gender-composition of the group affected the results. Table 20 shows that there were more positive feelings expressed in the single-gender naive groups than in the mixed-gender naive groups; these same persons, then, later felt more positive when in mixed-gender groups. Those in the naive mixed-gender groups felt even less positive in subsequent single-gender groups.

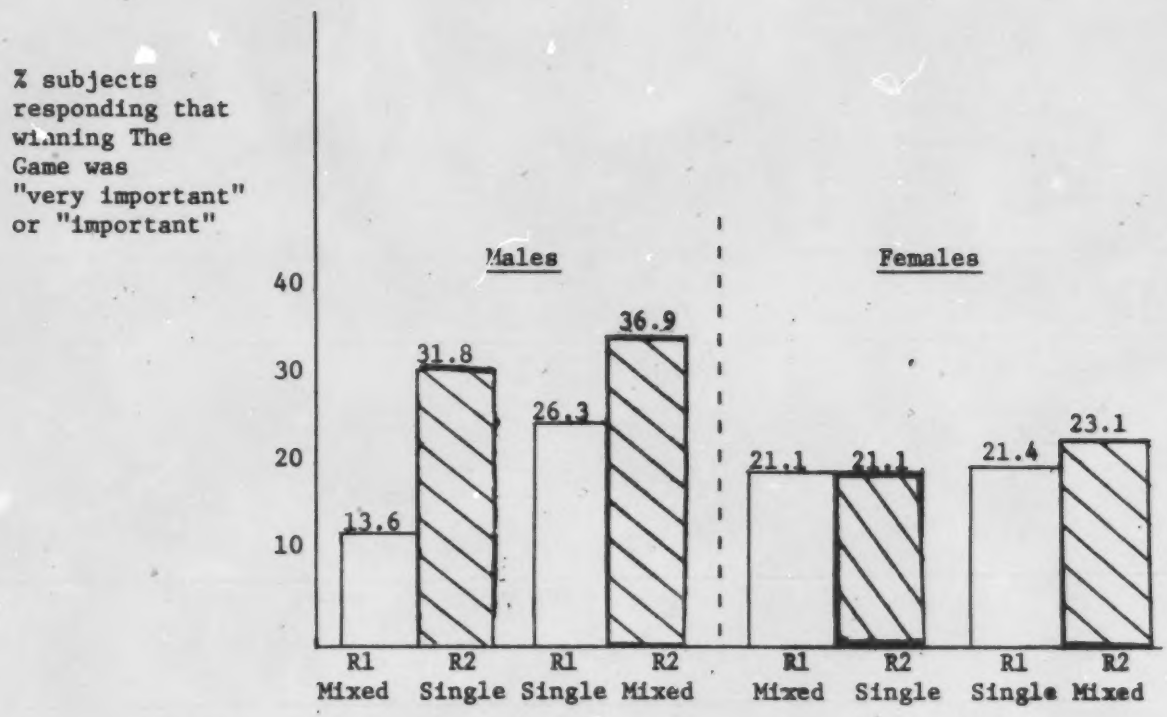


Fig. 5. Percentage of Subjects Responding that Winning The Game Was Very Important, by Gender of Subject, Group Composition and Experience.

The gender-composition of the group in which subjects first played The Game affected their perception of whether other boys or girls would like to play The Game. Males and females who first played The Game in single-gender groups were more likely to report that other persons of their own sex would like The Game (79.9%) than were those who first played The Game in mixed-gender groups (53.7%). Overall, males reported more uncertainty about whether other males would like The Game (40.5%) than females reported about other females (24.2%). Ninety-five percent of all respondents reported that both boys and girls would like The Game the same amount.

Subjects were asked whether they had ever felt at a disadvantage while playing The Game, or whether anything had made them angry. A larger proportion of those who had played The Game first in mixed-gender groups felt disadvantaged (43.9%) or angry (19.5%) than those who had played The Game in single-gender groups (26.5% and 5.9%, respectively).

From these responses we infer that playing The Game in a single-gender group initially created a more favorable experience for subsequent experiences of The Game. This was true for both females and males.

Table 20

Percentage of Male and Female Subjects Responding in Three Categories of Feelings about Participating in The Game, by Gender Composition and Experience of Group

Type of group	"How do you feel about participating in this group?"		
	Enjoyed it a lot	Enjoyed it a little	Felt neutral or did not enjoy
Naive			
All-female (N = 14)	85.8	14.3	0.0
All-male (N = 20)	90.0	5.0	5.0
Female in mixed (N = 19)	64.4	15.8	15.8
Male in mixed (N = 22)	72.7	9.1	18.1
Experienced			
All-female (N = 19)	57.9	15.8	26.4
All-male (N = 22)	72.7	13.6	13.6
Female in mixed (N = 14)	85.7	7.1	7.1
Male in mixed (N = 20)	85.0	15.0	0.0

VII

RELATIONSHIP TO CLASSROOM ACTIVITY

Does the relative activity of males and females in mixed-gender groups playing a board game have any relationship to the relative activity of the same group of students in a class? To investigate this question, a videotape was made of a half-hour segment of a session in which the same groups of two males and two females served as students in a microteaching class. The participation of each student in the class was coded according to the Manual for Observers (Appendix E), which credits students with performance outputs for hand-raising but in other respects is identical to the coding for The Game.

Table 21 shows the relationship between classroom rank in initiation and game rank in initiation. Ranks 1 and 2 have been collapsed, and ranks 3 and 4 have been collapsed to meet the requirements of the χ-square test. It is clear that the ranks are highly correlated and that those who were highly active in the game were also highly active in class (78%), while those who were quiet in the game were quiet in the class (74%). This may, however, be a treatment effect, whereby performance evaluations of self and others relative to The Game generalized to the class situation.

At the level of each group, there were nine groups for which the rank correlations were .80 or better, three groups for which the correlations were .40 or better, and three groups for which the correlations were negative. It is noteworthy that the correlations of seven of the naive mixed-gender groups but only two of the experienced mixed-gender groups were .80 or better. Thus, the consistent patterns of male leadership were upheld in the naive groups when

they experienced the new task (the class), but when the groups were disrupted for The Game, the experienced groups settled back to behavior influenced by the status of the group members. Even in this situation, however, the experienced groups were still slightly more likely to have females in the higher ranks of activity and males in the lower ranks than were the naive groups. The discrepancy between the ranks occupied by experienced males and females in The Game and in the class would suggest, however, that the correlations between rank in game and rank in class were not due to a treatment effect. If it were so attributed, then there should be similar correlations for both naive and experienced groups. Since there is somewhat of a discrepancy, the correlations may be interpreted as evidence that The Game is a reasonable proxy for naive classroom interaction, but that "treatments" for increasing female leadership in The Game do not generalize to the classroom.

Table 21

Numbers of Persons Having High or Low Rank in Initiation on The Game by High or Low Rank in Initiation in Class

		Initiation on The Game	
		High	Low
Initiation in the class	High	26	8
	Low	7	23

$x^2 = 18.02$ $p < .005$

Table 22

Number of Groups in which Males and Females Held Ranks 1-4 of Total Task-Oriented Initiation Microteaching

Rank in group	Females: Number of groups	Males: Number of groups
	Naive groups	
1 or 1.5	2	7
2 or 2.5	1	6
3 or 3.5	7	2
4	6	1
	Experienced groups	
1 or 1.5	2	7
2 or 2.5	5	3
3 or 3.5	6	2
4	3	4

VIII

SUMMARY AND CONCLUSIONS

Two conclusions were drawn from this study. First, the absence of differences in total group activity and in individual rates of initiation between males and females in single-gender groups implies that patterns of emergent male leadership in mixed-gender groups cannot be attributed to sex differences. Second, the degree to which the pattern of male leadership has been modified by the simplest of treatments--an order effect, in fact, of the research design--suggests that what is identified as a problem is easily susceptible to intervention. Related to this point is the additional fact that the "intervention" in this study is associated with better interpersonal attraction between the males and females in the group, more shared leadership between males and females in The Game, less aversive reaction to The Game environment, and more involvement in winning.

What may be safely inferred from these conclusions? First, if a task is initially introduced to a mixed-gender group, the males will value it less but will dominate the task-oriented interactions. If the identical task is first introduced to a single-gender group, subsequent mixed-gender experience will be valued by males and will exhibit greater balance of power between the males and the females. This will hold only in the case of <u>identical</u> tasks, in which persons have an opportunity to establish a specific performance characteristic for themselves vis-a-vis the task.

Thus, when differences in status between task group members occur, the prior specific performance characteristic of an individual, based on his or her self-evaluation of his or her previous performance, will prevent the activation of the diffuse status characteristic. For example, if both boys

and girls learn to play baseball in single-gender teams and then play in mixed-gender teams, we expect male and female players to presume equal status for each other. On the other hand, if girls learn softball (or "girls'" rules) and boys learn hardball (or "boys'" rules), and if they then play together on a baseball team, there will be no expectation of equal status.

Since it is difficult to reproduce experimental controls in real-life situations, the question arises of developing an intervention which transfers to new tasks. We have seen that the limited treatment-effect found in The Game did not transfer to the class to any significant degree. Nevertheless, teachers might be encouraged to assign identical tasks to male and female small groups prior to giving the task to mixed-gender groups. Thus, reading and math groups might initially be sex-segregated, provided the curriculum is identical. In this manner a small modification in the prevalent pattern of male dominance of mixed-gender groups may be achieved.

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Appendix A

"THE GAME"

A-1

Instructions for "THE GAME"

To win, remember two rules: One, work together--that means you must make all decisions as a team. Two, you have only fourteen turns with throws of the die to reach the goal and win The Game.

Of course, you will want to reach the goal and at the same time score as many points as possible along the way. You have to start at the starting point, and from there you may choose any path or direction--frontwards, backwards, and any direction you decide upon as a team. For each move, you must indicate at least six squares. When you have decided which path to take, tell the host experimenter you are ready, and he or she will mark the path you have chosen and he or she will throw the die to determine how many squares you get to move.

Here are a few hints which will help you score points: The first thing to notice is that there are two different kinds of numbers in the squares: the positive numbers are plus points and the negative numbers are minus points. When you land on a positive number, you win points. When you land on a negative number, you lose points. The next thing to notice are the double plus and the double minus signs. If you land on a square with a double plus, you will get an extra turn. If you land on a square with a double minus, you will lose a turn.

The next thing to remember is that you can score more points as you move farther from the center of the board.

There is a special path to reach the goal quickly--it is called the "hot line." It is the quickest way to get to the goal but it has many more negative numbers, so you take a big risk of losing points if you use it. However, if you have almost used up your fourteen turns and have to get to the goal quickly then you might want to use it anyway.

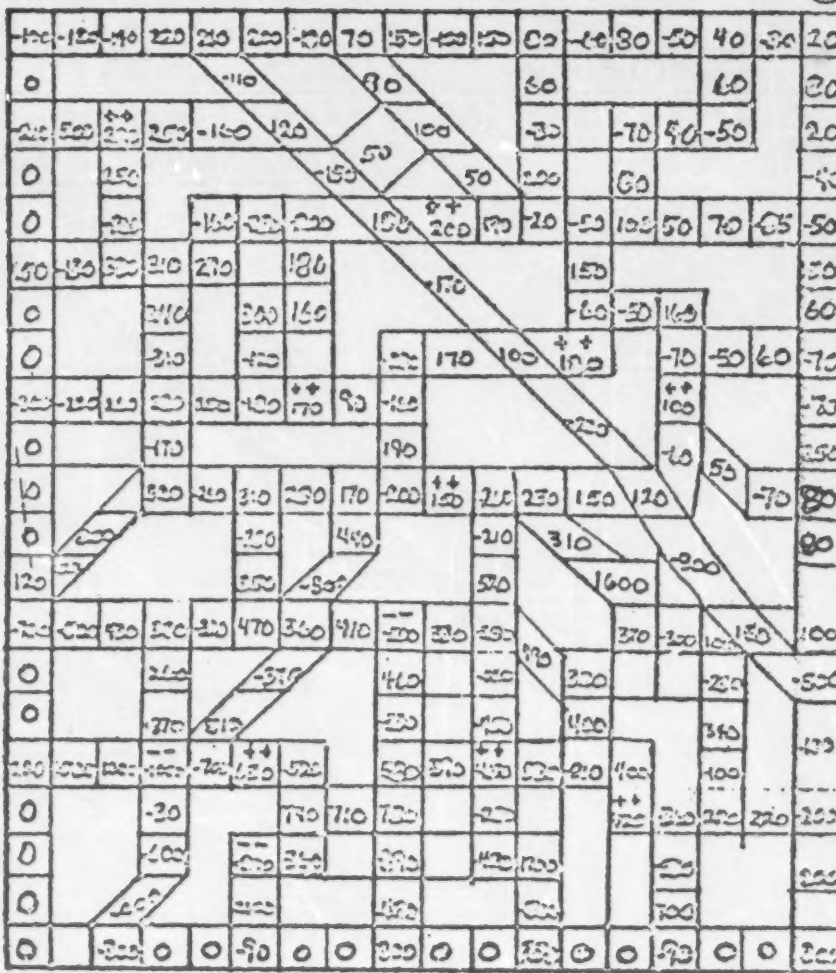
A-2

Remember these main rules: One, you must make all decisions as a team. Two, you must reach the goal in fourteen turns or you lose the game no matter how many points you have. Third, the negative numbers mean you lose points; the positive numbers mean you win points. Fourth, the double pluses mean you win an extra turn; the double minuses mean you lose a turn. You may follow any path or direction to reach the goal. The farther you move from the center of the board the more points you can score, but the farther away you get from the goal. The hot line can help you to go more quickly.

To help you remember these pointers, we have written them on a poster. You may look at the poster during the game if you have a question.

Now you are ready to play The Game. Remember you must make all decisions as a team. Now you can decide on your first move. Usually it is easier to plan your path one move at a time, so don't think that you have to plan your whole path at the very beginning. As soon as you have decided on the first six squares, tell the host experimenter and you will be on your way. Good luck!

THE GA



Appendix A (cont'd)

Appendix B

RECRUITING LETTER AND MATERIALS

78-A

B-1

July 16, 1973

Dear Student:

We are now compiling the schedule for the teacher-student study at ETS this summer. We hope that we will be able to include you in the study, if your available time fits our schedule. We will be in touch with you by telephone to ask about your summer free time. In the meantime, will you please go through the attached list of names, following the directions at the top of the next page? After you have done so, please insert it in the enclosed envelope and mail back as soon as possible. It is important to do this today, if possible, because we can only schedule those students who have returned the enclosed lists.

We wish also to inform each of you that, since the time required for student participation has been increased from 5 to 9 hours during the scheduled week, each student participant will be paid $40 instead of $20 as originally planned.

As soon as we receive the marked list from you, we can attempt to schedule you for one of the summer weeks. Since the number of students we are able to use in the study is limited, try to mail back your list today. Thank you.

Sincerely,

The ETS Summer Teacher-Student Study
Telephone 609/921-9000, ext. 2770 or
2537

Enc.

B-2

Participant List Instructions

The attached sheets contain a list of names of potential participants in the ETS summer Teacher-Student study. We would like to know the pattern of acquaintanceships among the students who participate in the study. Therefore, to help us obtain this information, please go through the attached list and make a check mark next to each name, in the first column if you don't know the person at all, in the second column if you know them only by name, and in the third column if you know them well. After going through the list and checking every name, put your name at the top, insert the list in the enclosed ETS envelope, and mail it today if possible. Thank you.

Participation in this study will require that you come to ETS for one week including Monday morning and either morning or afternoon for the rest of the week. Please circle dates and time you will be available and mail this and the list back to us today.

week of: July 30--August 3

week of: August 6--August 10

week of: August 13--August 17

week of: August 20--August 24

Morning or afternoon--(circle when you can come)

Call 609/921-9000 X 2721 if you have any questions.

_____

NAME

Appendix C

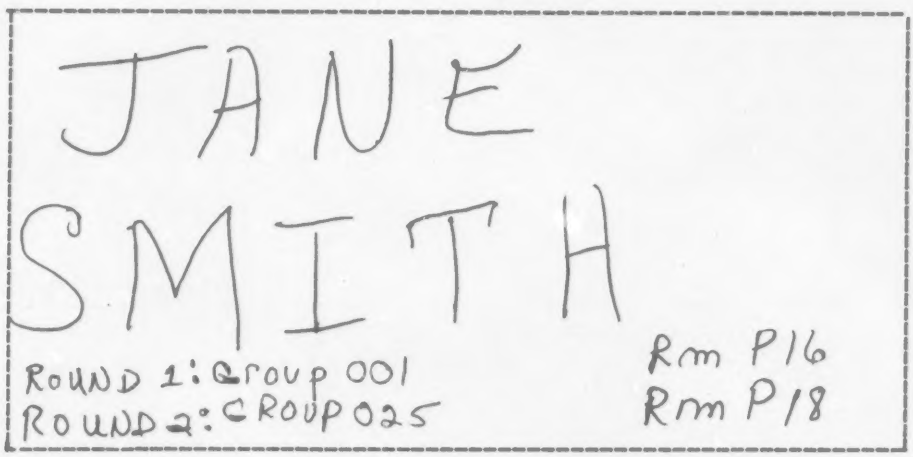
INSTRUCTIONS FOR EXPERIMENT PERSONNEL

C-1

Instructions for Coordinator--Mondays

1. Welcome the 16 students. Thank them for coming. Tell them that the first thing they will do this morning is play a board game.

2. Give them each their name tags, as follows:



3. Name tags should be placed in the middle of the chest.

4. Escort groups to Game Rooms.

5. After 40 minutes return and collect students; escort them to the new room.

C-2

SCRIPT FOR HOST EXPERIMENTERS

before playing the game

This morning you will be playing a team board game being developed for use with high school students. To help us evaluate the game, we will be videotaping this session. Please speak loudly and keep your chairs close together; this way you will be sure to get in the picture.

The highest score any team has made playing this game is 2,200 points. You may wish to try and top this score.

To begin, please state your name loudly and clearly so I can check the microphones. What is your name (ask #1) Yours? (#2) Yours? (#3) Yours? (#4). Thank you.

Now I will play the instructions for the game.

C-3

SCRIPT FOR HOST EXPERIMENTERS

Round 2

You have all played this game once before today. Remember the important rules:

1) work together as a team

2) you have fourteen turns to reach the goal

You may refer to the chart if you have any questions about the rules.

Before you start, will you please state your name loudly and clearly. What is your name, please (#1) Yours? (#2) Yours? (#3) Yours? (#4).

Thank you. Now you may begin. Remember to speak loudly and keep your chairs close together for the camera.

C-4

SCRIPT FOR HOST EXPERIMENTERS

post meeting questionnaire

(Round 1, Round 2 and Friday)

Now we would like to ask you a few questions about the game. You may move your chairs apart while you fill out this questionnaire. Please do not look at other people's papers.

At the top of the page, fill in the date, group number, your name and the number of your chair.

For question #1, "Was it important for you to win the game?" Circle the answer that best says how you felt.

For question #2, write (give name of first student) in the space numbered 1; write _____ (second student) in the space numbered 2; write (third student) in the space numbered 3; write (fourth student) _____ in the space numbered 4.

Now go ahead and answer the rest of the questions. When you have finished, sit quietly until the others are through.

Appendix D

POST-GAME QUESTIONNAIRES

Round 1: Post Meeting Questionnaire

Date_____ Name_____

Group Number_____ Seating Position_____

1. Was it important for you to win the game? Would you say it was:

(1)	(2)	(3)	(4)	(5)	(6)
Very Important	Important	Somewhat Important	Somewhat Unimportant	Unimportant	Very Unimportant

2. Here is a picture of where each of you sat while playing the game.

_____ _____2 3_____

_____1 4_____

Please rate all the members of the team including yourself on the following:

A. Who had the best ideas in the game?, the next best?, the third best?, the fourth best?

1. Name_____ Seating position_____
2. Name_____ Seating position_____
3. Name_____ Seating position_____
4. Name_____ Seating position_____

B. Who did the most to guide and direct the group (keep things moving) while playing the game? The second, third, fourth most?

1. Name_____ Seating position_____
2. Name_____ Seating position_____
3. Name_____ Seating position_____
4. Name_____ Seating position_____

C. Of the other three members of the team which person did you like the most, the next most, the least?

1. Name_____ Seating position_____
2. Name_____ Seating position_____
3. Name_____ Seating position_____

D-2

D. Of the other three members of the team, which person did you dislike the most, the next most, the least?

1. Name_____ Seating position_____
2. Name_____ Seating position_____
3. Name_____ Seating position_____

3. Overall, who would you say stood out as the leader of the group? (Include yourself.)

Name_____ Seating position_____

4. How do you feel about participating in this group? Would you say you:

(1)	(2)	(3)	(4)	(5)
Enjoyed it a lot	Enjoyed it	Enjoyed it a little	Felt neutral about it	Did not enjoy it

5. For girls only:

Do you think other girls would like to play this game?

Yes____ Not Sure____ No____

For boys only:

Do you think other boys would like to play this game?

Yes____ Not Sure____ No____

6. Who do you think would like this game more, boys or girls? (check one)

_____Boys would like this game more than girls.
_____Girls would like this game more than boys.
_____Both boys and girls would like this game the same amount.

D-3

Round 2: Post Meeting Questionnaire

Date_____ Name_____

Group Number_____ Seating position_____

1. Was it important for you to win the game this time? Would you say it was: (circle one)

(1)	(2)	(3)	(4)	(5)	(6)
Very Important	Important	Somewhat Important	Somewhat Unimportant	Unimportant	Very Unimportant

2. Here is a picture of where each of you sat while playing the game.

_____2 3_____

_____1 4_____

Please rate all members of the team including yourself on the following:

A. Who had the best ideas in the game?, the next best?, the third best?, the fourth best?

1. Name_____ Seating position_____
2. Name_____ Seating position_____
3. Name_____ Seating position_____
4. Name_____ Seating position_____

B. Who did the most to guide and direct the group (keep things moving) while playing the game? The second, third, fourth most?

1. Name_____ Seating position_____
2. Name_____ Seating position_____
3. Name_____ Seating position_____
4. Name_____ Seating position_____

C. Of the other three members of the team which person did you like the most, the next most, the least?

1. Name_____ Seating position_____
2. Name_____ Seating position_____
3. Name_____ Seating position_____

D-4

D. Of the other three members of the team, which person did you dislike the most, the next most, the least?

1. Name_____ Seating position_____
2. Name_____ Seating position_____
3. Name_____ Seating position_____

3. Overall, who would you say stood out as the leader of the group? (Include yourself.)

Name_____ Seating position_____

4. How do you feel about participating in this group? Would you say you:

(1)	(2)	(3)	(4)	(5)
Enjoyed it a lot	Enjoyed it	Enjoyed it a little	Felt neutral about it	Did not enjoy it

5. What do you think a good name for this game would be?_____

6. Did you ever feel at a disadvantage when playing this game?

Yes_____ No_____

7. Did anything make you angry at any time?

Yes_____ No_____

8. Would you consider coming back and helping us with another study?

Yes_____ No_____

9. Additional comments_____

_____

_____

Thank you for helping us today.

D-5

Friday Post Meeting Questionnaire

Date_____ Name_____

Group Number_____ Seating Position_____

1. Was it important for you to win the game? Would you say it was:

(1)	(2)	(3)	(4)	(5)	(6)
Very Important	Important	Somewhat Important	Somewhat Unimportant	Unimportant	Very Unimportant

2. Here is a picture of where each of you sat while playing the game.

_____2 3_____

_____1 4_____

Please rate all the members of the team including yourself on the following:

A. Who had the best ideas in the game?, the next best?, the third best?, the fourth best?

1. Name_____ Seating position_____
2. Name_____ Seating position_____
3. Name_____ Seating position_____
4. Name_____ Seating position_____

B. Who did the most to guide and direct the group (keep things moving) while playing the game? The second, third, fourth most?

1. Name_____ Seating position_____
2. Name_____ Seating position_____
3. Name_____ Seating position_____
4. Name_____ Seating position_____

C. Of the other three members of the team which person did you like the most, the next most, the least?

1. Name_____ Seating position_____
2. Name_____ Seating position_____
3. Name_____ Seating position_____

D-6

D. Of the other three members of the team, which person did you dislike the most, the next most, the least?

1. Name_____ Seating position_____
2. Name_____ Seating position_____
3. Name_____ Seating position_____

3. Overall, who would you say stood out as the leader of the group? (Include yourself.)

Name_____ Seating position_____

4. How do you feel about participating in this group? Would you say you:

(1)	(2)	(3)	(4)	(5)
Enjoyed it a lot	Enjoyed it	Enjoyed it a little	Felt neutral about it	Did not enjoy it

5. For girls only:

Do you think other girls would like to play this game?

Yes_____ Not Sure_____ No_____

5. For boys only:

Do you think other boys would like to play this game?

Yes_____ Not Sure_____ No_____

6. Who do you think would like this game more, boys or girls? (Check one)

_____Boys would like this game more than girls.

_____Girls would like this game more than boys.

_____Both boys and girls would like this game the same amount.

7. What do you think a good name for this game would be?

_____

8. Did you ever feel at a disadvantage when playing this game?

Yes_____ No_____

9. Did anything make you angry at any time?

Yes_____ No_____

10. Would you consider coming back and helping us with another study?

Yes_____ No_____

D-7

11. Additional comments_____

_____

_____

Appendix E

MANUAL FOR OBSERVERS

E-1

Manual for Observers I*

Introduction

Investigators considering sociological questions such as interpersonal relationships, attitude change, group structure, and leadership, have tested many of their hypotheses with small groups in a controlled laboratory setting. The purpose of this study is to examine the interaction which takes place in task-oriented groups. The subjects are 9th and 10th grade boys and girls. They are divided into groups of four, and each group is observed playing a game.

The data which will be used for testing hypotheses and drawing conclusions will come almost entirely from the work of the observers who will score from pre-recorded tapes the verbal interaction of the subjects as they play the game. It is therefore critical to the success of the research that each observer become completely familiar with the scoring rules and develop the ability to record interaction accurately.

Since the reliability of the human observer as a measuring instrument is subject to wide variation, we have tried to outline a training schedule which will communicate all of the instructions, and which will give the observers a common frame of reference within which to score and to handle problems which we have not anticipated.

Schedule for Training

The task of learning how to score interaction requires concentration and practice. The time spent perfecting your skills as an observer is an important part of your work on the project. The schedule below indicates the steps you should take in preparing. We will go over the first step, the category system

*Adapted by permission from a manual for observers, E.G. Cohen, Stanford Center for Research and Development in Teaching, Stanford University.

and rules for scoring, at the introductory meeting. In addition, there will always be a member of the project team whom you can contact for questions and guidance.

Category System for Observing Interaction

1. Definition of an act:

The system of analysis we are using is concerned with verbal interaction only. Therefore, gestures, incoherent mutterings, and other forms of nonverbal behavior are not considered interaction. EXCEPTION: When a subject shakes his or her head "yes" or "no" in response to a question from another subject, this gesture will be scored as would the words "yes" or "no." It should be clear that this gesture is scored ONLY when it is a response to a direct question.

An act is the single continuous speech of one individual. A speech is considered continuous, regardless of pauses, so long as it (1) is not interrupted by another individual and, (2) it remains in one category of Type of Act (see below). A single word or a single phrase is considered an act only if the word or phrase expresses a complete thought. Thus, "what?," "why?," "yes," and "no" are considered acts, whereas "er," "Mmmmm," and "we. . ." are not.

2. Scoring of an act:

The scoring of an act has two components:
Initiator: the person speaking
Type of Act: classification of the content of the remark

3. Definition of Type Act

Performance Output (P)

A performance output is a unit of interaction that exhibits the attribute of task facilitation, that is, it can be agreed upon that this unit is intended to move the task toward a previously stated end state. Specifically for this game, interaction which accomplishes the following is to be included.

1. An actor indicates an alternative (path) for the group to follow.

2. An actor indicates the costs and rewards of a series of possible paths or of a particular path.

3. An actor indicates an overall strategy intended to facilitate reaching the specified goal.

Action Opportunity (A)

An action opportunity is to be conceived of as a socially distributed chance to perform. That is, when a unit of interaction exhibits the characteristic of requiring the emission of another unit by another actor or actors, it will be scored as an action opportunity.

Positive Unit Evaluation (+)

A positive unit evaluation is conceived of as one which exhibits the property of agreeing with or raising the status of a unit of interaction previously emitted by another actor or actors, or a unit which raises the status of another actor regardless of whether he or she emitted a unit or not.

Negative Unit Evaluation (-)

A negative unit evaluation is one which disagrees with or attempts to lower the status of a previously emitted unit of interaction, or attempts to lower the status of another actor, regardless of whether he or she emitted a unit of interaction or not.

4. Rules for scoring ambiguous situations

A. Clarification of Negative Evaluation

In general, an act is scored as a negative evaluation when a person reacts negatively to another actor's suggestions:

1. points out negative values in someone else's strategy
2. disapproves of an idea or strategy suggested by another actor
3. points out negative consequences of another player's suggested path
4. responds with a "no" to the action opportunity "Do you want to go this way?"

A problem arises when the subjects in a group offer competing suggestions--often a player will effectively disagree with another player's suggestions by offering a competing path, and his or her suggestion seems therefore to fall into both the P and - categories. The rules for handling this situation will be the following:

1. When the comparison is stated, the act will be scored as a negative. Ex. "I like the hot line better" or "This path has fewer red minuses."

2. When the comparison is not stated:
   If a player is offering an original suggestion, score his or her act as a P.
   If a player is repeating a suggestion made earlier, score it as a - (he or she is in effect selecting one of the proposed alternatives as superior to the one suggested immediately preceding his or her speech.)

Example of Scoring

Subject	Statement	Score
1	Let's go this way	1 p
2	No, look at all the minuses	2 -
3	This way looks good	3 p
4	I like the hot line better.	4 -
3	The hot line is all minuses	3 -
	This path (his own) has 500	
2	We could get 1000 this way (1's original suggestion--if it is not obvious that this promotes a previous suggestion, then score it p) . .	2 -

B. Responses to Action Opportunity

1. A "yes" or "no" response to A such as "Do you want to go this way?" is scored as + or - to the person giving the action opportunity.
2. All ther responses to an A are scored as p unless the response throws back another action opportunity

Ex.	Did you mean we should turn here?	1 A
	No, only here.	2 p
	What do you think we should do?	1 A
	I don't know.	2 A

C. "Yea" Always Scored Positive Evaluation.

D. Comments After the Die Has Been Thrown:

Do not score: a) Statements of fact about score, such as "We have 500 now."
b) Any remark made to the Host Experimenter.

Do score: comments which relate to the task ahead or comments on paths taken, for example:
"I told you we shouldn't have gone that way" 1 -
"You really did well" 1 +
"Next time we should go straight" 1 P

E. If someone gives an order such as "I'll count this way and you count this way," score it as an action opportunity.

Manual for Observers II

The measure of influence on a given turn consists of identifying the individual who first suggested the path which was ultimately followed. Thus, the procedure to follow in coding influence is:

1. identify the path taken by the players on TURN 1
2. rewind tape and observe to see who first suggested this path; record who this is
3. proceed to TURN 2

CODING MANUAL

Student-Teacher Interaction

What is to be Coded

This study is concerned with verbal interaction. However, because the classroom is controlled by the teacher, certain gestures by students will be coded as well.

Definitions:

1. Speech: The entire set of verbal utterances made by an actor, uninterrupted by another actor.

2. Act: (or communication) A complete thought expressed by an actor. A single word or phrase is considered an act only if the word or phrase expresses a complete thought. Thus, "What," "Why," "Yes" and "No" are considered acts, whereas "Er," "MM," and "I..." are not. An act will generally be a simple sentence.

The distinction between a speech and an act is made to enable the coder to more completely identify various parts of what may well turn out to be a monologue on the part of the teacher.

Aspects of Each Act to be Classified

1. Who initiated the act. Use of identification number of the child in scoring. Classifying acts according to the initiator will not present any serious problems if the observers follow the following conventions:

A) An act is initiated by individuals only. The class as a whole cannot initiate. If two people are talking simultaneously and each completes a thought, score both acts. The order in which you score simultaneous acts is not important. The only exception to this rule is when the class answers the teacher in unison.

B) As soon as a speaker completes a thought, record him as initiating. Do not wait until he has finished his speech. Since the observer must then determine the type of act (part 2, below) and finally decide who receives the act (part 3, below), he should make the simpler decision as soon as he can.

2. The type of act. There are four categories of acts. Each act must be classified into one of the following:

P -- Performance Output: An actor makes a statement which moves the task toward its goal.

A -- Action Opportunities: An actor gives a socially distributed chance to perform. That is, he makes a comment which is intended to elicit a response.

+ -- Positive Evaluation: An actor reacts favorably to another actor's idea. That is, he shows agreement with the statement, points out positive aspects of the statement, or praises the other actor for the statement, or praises the other actor himself.

- -- Negative Evaluation: An actor reacts negatively to another actor or to another actor's idea. That is, he shows disagreement with the statement, points out negative aspects of the statement, or criticizes the actor for his statement, or criticizes the statement itself.

3. The receiver of the action. Any individual member of the class (including the teacher) or the group as a whole can be the receiver of an act. Scoring the receiver of an act can present serious problems, especially if the receiver and the initiator of the act are both students. The observer may have to infer the intent of the speaker. If the speaker mentions his receiver by name, then the inference is clear. Other clues include the person at whom the speaker looks, the content of the previous speech, and physical gestures such as pointing.

What Acts to Score

It is clear that not all things which go on in the classroom are instrumental to the learning task. For this study, only those acts which directly relate to educational tasks are to be coded. Such acts are by and large determined by the teacher; it is rare that a student will determine what is the educational task at hand. Therefore,

1. Score acts which relate to teacher imposed tasks. If the teacher has given permission to a student to set an educational task for the class, then score acts relevant to this task as well. Also, task related acts which appear out of context (i.e., math comments in a social studies class) are not to be coded.

2. Score behavior which are initiation attempts (such as raising a hand) within the task area. These will be scored as potential performance output. The most common such behavior is hand raising which will be scored H.

3. What not to score.

-- Non-task remarks, such as items of procedure (ask to sharpen pencil), student reporting on another student ("tattling"), teacher discipline of a student ("be quiet," "sit down").

-- Other behaviors, especially disruptive ones (pencil throwing, pushing, walking around).

A final word of caution: Score only those acts which directly relate to the classroom task at hand. All other acts or behavior are to be excluded.

Timing -- draw lines after each 5 minutes.

BLANK CODING SHEET

Coder Name_____ Date Coded_____

Group #_____ Game Class

KID SEAT #	KID NAME	KID ID #	P	A	+	-	TOTAL
1							Σ1=
2							Σ2=
3							Σ3=
4							Σ4=
	Group Total:		ΣP=	ΣA=	Σ+=	Σ-=	

Appendix F

DEMOGRAPHIC INFORMATION ABOUT SUBJECTS

Means on screening test scores for subjects assigned to two orders of experimental conditions, by sex

Order (Round 1-Round 2)	Screening Tests		
	GEFT	RFT	VOCABULARY
Single gender-mixed gender			
Females (N = 14)	13.21 (2.86)	34.64 (18.99)	19.21 (6.93)
Males (N = 20)	12.85 (3.80)	29.95 (30.33)	20.85 (5.93)
Mixed gender-single gender			
Females (N = 19)	12.42 (2.87)	44.63 (28.12)	19.58 (7.61)
Males (N = 22)	12.91 (2.76)	20.50 (14.47)	21.14 (6.74)

Demographic information
on subjects
with complete data records

	Females (N = 33)	Males (N = 42)
Grade		
9th	0	0
10th	19	23
11th	14	19
Age		
14	8	7
15	17	22
16	8	13